IN THE CLAIMS

Please amend the claims as follows:

1. (Presently amended) A bulky sheet comprising:

an entangled fiber aggregate formed by water needling of a fiber web,

said bulky sheet having a number of projections and depressions comprising said entangled fiber aggregate,

wherein said projections have a corresponding depression on an opposite side of said bulky sheet and have a distance between projections in a width direction and a longitudinal direction,

said projections and said depressions being formed both by rearrangement of the constituting fibers of said entangled fiber aggregate by water needling of said entangled fiber aggregate and by the multiple bending manner of said entangled fiber aggregate along the thickness direction thereof,

a distribution of said constituting fibers caused by migrating of said fibers in said projections toward said depressions being at a very low level, and

said projections and said depressions retaining the shape thereof by themselves

wherein said entangled fiber aggregate has an entanglement coefficient of 0.05 to 2 N• m/g.

2. (currently amended) A bulky sheet comprising:

an entangled fiber aggregate formed by water needling of a fiber web and a network sheet,

said bulky sheet having a number of projections and depressions comprising said entangled fiber aggregate, the constituting fibers of said entangled fiber aggregate which are

entangled with each other by said water needling are further entangled with and/or thermally bonded to said network sheet thereby forming a unitary body,

said projections having a corresponding depression on an opposite side of said bulky sheet and have a distance between projections in a width direction and a longitudinal direction,

and said projections and said depressions being formed both by rearrangement of the constituting fibers of said fiber aggregate by water needling of said fiber aggregate and by the multiple bending manner of said fiber aggregate along the thickness direction thereof,

a distribution of said constituting fibers caused by migrating of said fibers in said projections toward said depressions being at a very low level, and

said projections and said depressions retaining the shape thereof by themselves

wherein said entangled fiber aggregate has an entanglement coefficient of 0.05 to 2 N•m/g.

3. (Original) The bulky sheet according to claim 1, having an apparent thickness of 1 to 5 mm, and an apparent volume of 23 to 100 cm^3/g.

4. (Original) The bulky sheet according to claim 1, having an elongation of 5% or less in the machine direction thereof measured under the condition of 5N/30mm.

5. (Original) The bulky sheet according to claim 1, wherein said fiber aggregate contains fibers having a fineness of 5 dtex or less at an amount of 50 % by weight or more, and has a basis weight of 30 to 100 g/m^2.

6. (withdrawn) A process for producing the bulky sheet according to claim 1 comprising the steps of:

water needling a fiber web to entangle the constituting fibers of said fiber web with each other thereby forming a fiber aggregate;

transferring said fiber aggregate onto a patterning member having a number of depressions and projections or a number of perforations; and

projecting part of said fiber aggregate into said depressions or said perforations to form a number of projections corresponding to said depressions or said perforations,

said patterning member having a thickness of 5 to 25 mm, or having an air permeability of 800 to 3000 $cm^3/(cm^2sec)$,

the energy Em and the energy Ef are applied to said fiber web and said fiber aggregate, respectively, in such a manner that the energy Em and the energy Ef satisfy at least one of the following formulae:

$200\ (kJ/kg) < Em+Ef < 1250\ (kJ/kg)$

$Em/10 < Ef < 2Em/3$

wherein Em is an energy which is applied to said fiber web to form said fiber aggregate by said water needling, and Ef is an energy which is applied to said fiber aggregate to project part of said fiber aggregate on said patterning member.

7. (withdrawn) The process according to claim 6, wherein the constituting fibers of said fiber web are entangled with each other by said water needling thereby forming such a fiber aggregate as to have an entanglement coefficient of 0.05 to 2.0 N·m/g

8. (withdrawn) A process for producing the bulky sheet according to claim 2 comprising the steps of:

water needling a fiber web to entangle the constituting fibers of said fiber web with each other thereby forming a fiber aggregate;

superposing said fiber aggregate on one side or both sides of a network sheet and partially thermally bonding said constituting fibers to said network sheet thereby forming a unitary body;

transferring said fiber aggregate onto a patterning member having a number of depressions and projections or a number of perforations; and

projecting part of said fiber aggregate into said depressions or said perforations to form a number of projections corresponding to said depressions or said perforations,

said patterning member having a thickness of 5 to 25 mm, or having an air permeability of 800 to 3000 $cm^3/(cm^2sec)$,

the energy Em and the energy Ef are applied to said fiber web and said fiber aggregate, respectively, in such a manner that the energy Em and the energy Ef satisfy at least one of the following formulae:

$200\ (kJ/kg) < Em+Ef < 1250\ (kJ/kg)$

$Em/10 < Ef < 2Em/3$

wherein Em is an energy which is applied to said fiber web to form said fiber aggregate by said water needling, and Ef is an energy which is applied to said fiber aggregate to project part of said fiber aggregate on said patterning member.

9. (Original) The bulky sheet according to claim 2, wherein said bulky sheet has not been subjected to heat shrinking of said network sheet, or said network sheet has a heat shrinkage of 3% or less as measured under 140°C for 3 minutes.

10. (Original) The bulky sheet according to claim 1, having a breaking strength of at least 5 N at the width of the specimen of 30mm.

11. (currently amended) A bulky sheet comprising:

an entangled fiber aggregate,

said bulky sheet having a number of projections and depressions comprising said entangled fiber aggregate,

wherein said projections have a corresponding depression on an opposite side of said bulky sheet and have a distance between projections in a width direction and a longitudinal direction,

a distribution of said constituting fibers caused by migrating of said fibers in said projections toward said depressions being at a very low level, and

said projections and said depressions retaining the shape thereof by themselves

wherein said entangled fiber aggregate has an entanglement coefficient of 0.05 to 2 N• m/g.

12. (new) The bulky sheet of claim 1, having an entanglement coefficient of 0.2 to 1.2 N• m/g.

SUPPORT FOR THE AMENDMENT

Support for the amendments to Claims 1, 2 and 11 is found on page 15, lines 1-4 of the specification. Support for claim 12 is found on page 15, line 4 of the specification. No new matter would be added to this application by entry of this amendment.

Upon entry of this amendment, Claims 1-12 will now be active in this application, with claims 1-5 and 9-12 being under active consideration.

REQUEST FOR RECONSIDERATION

The present invention is directed to a bulky sheet.

Applicants would like to thank Examiner Chevalier for the helpful and courteous discussion held with their U.S. representative on June 2, 2004. At that time, Applicants' U.S. representative argued that the cited reference failed to suggest a bulky sheet having an entanglement coefficient of 0.05 to 2 N• m/g. The following is intended to expand upon the discussion with the Examiner.

Disposable cleaning sheets based on entangled fibers have recently become popular for household cleaning. Dirt and debris may become entrapped within entangled fibers providing for the removal of dust, rather than simply being redistributed.

The desire to improve the feel and performance of such bulky sheets has resulted in the introduction of a patterned surface thereon. During such patterning, it is sometimes the case that the pattern is formed unevenly or a desired thickness is not obtained. Accordingly, improved bulky sheets are sought.

The present invention addresses the problem by providing for a bulky sheet comprised of an entangled fiber aggregate having projections and depressions, having an entanglement coefficient of 0.05 to 2 N• m/g. Applicants have discovered that such a sheet feels soft and

agreeable to the touch and is capable of picking up dirt and debris from uneven surfaces. Such a bulky sheet is nowhere disclosed or suggested in the cited prior art of record.

The rejections of claims 1 and 11 under 35 U.S.C. § 103(a) over Cotton et al. (U.S. 5,223,319) in view of Horrocks and of claims 2, 4, 9 and 10 under 35 U.S.C. § 103(a) over Cotton et al. in view of Horrocks in further view of Shizuno et al. U.S. 5,525,397 are respectfully traversed.

None of the cited references suggests a bulky sheet comprised of an entangled fiber aggregate having projections and depressions, having an entanglement coefficient of 0.05 to 2 N• m/g.

Cotton et al fails to disclose or suggest a bulky sheet comprised of an entangled fiber aggregate having projections and depressions, having an entanglement coefficient of 0.05 to 2 N• m/g.

Cotton et al describes a nonwoven fiber wipe in which at least one surface is raised (column 1, lines 56-65). In order to form the raised surfaces, the material is fed through a nip defined by rollers, pins pushing the fibers up into the corresponding orifices, leaving a plurality of raised surface areas and an aperture resulting from penetration of the pin through each of the raised surface areas **3**, i.e. the pins **7** pass completely through the web **2** (column 5, lines 37-40) The fibers are not thermally set by the pins so that the fibers generally adjacent to the aperture remain substantially unconsolidated and some fibers **may** remain which might extend across and partially obstruct the apertures (column 5, lines 41-45). In doing so, the sheet, as a result of creation of raised surfaces has holes therein, the fibers of which are subject to a significant redistribution. Therefore there is clearly a lowering of the degree of entanglement at the aperture, the degree of entanglement at the aperture being nearly zero.

In contrast, the present invention is directed to a bulky sheet comprised of an entangled fiber aggregate having projections and depressions, having an entanglement coefficient of 0.05 to 2 N• m/g. Applicants note that the claims have been amended to recite an entanglement coefficient of 0.05 to 2 N• m/g . As the cited reference fails to disclose or suggest an entanglement coefficient of 0.05 to 2 N• m/g the claimed invention is clearly not made obvious from this reference.

The remaining references of Horrocks and Shizuno et al. U.S. 5,525,397 do not cure the basic deficiencies of the primary reference.

The Horrocks does not disclose or suggest an entanglement coefficient of 0.05 to 2 N• m/g.

As discussed above, Cotton et al. describes a method is which raises surfaces are provided with an aperture therein, a condition which does not suggest an entanglement coefficient of 0.05 to 2 N• m/g. Therefore, independent of the general teaching of Horrocks as to the use of water needling for the entanglement of fibers, there is no suggestion of a cleaning sheet having an entanglement coefficient of 0.05 to 2 N• m/g as Cotton describes a treatment process which introduces apertures into the sheet, a condition where to local degree of entanglement is nearly zero.

Shizuno merely is cited for a description of specific physical properties of a dust cleaning sheet, however, fails to suggest a cleaning sheet having projections and depressions as claimed. Moreover, the teachings of this reference can not overcome the teachings of the primary reference of Cotton in which an aperture is introduced, creating an area in which the degree of entanglement is nearly zero.

As such the references do not cure the basic deficiencies of the primary reference and accordingly, any rejections under 35 U.S.C. 103(a) should be withdrawn.

Applicants submit this application is now in condition for allowance, and early notification of such action is earnestly solicited.

Respectfully submitted,

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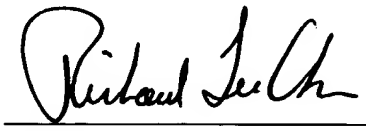

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